



Short Course Offering:
Introduction to Aeronautics – A Practical Perspective

- **WHEN & WHERE:** 11-14 January 2010 (8:00 – 4:30) at the National Institute of Aerospace, Hampton, Virginia
- **COURSE DESCRIPTION & MATERIALS:** After taking this course, you will never look at an airplane the same again! Using design as a common thread, this course answers questions like: High wing placement or low – swept or unswept? One vertical stabilizer or two? Canard or conventional configuration? Turbofan or turbojet? Packed full of examples, you will graduate with a solid understanding of the basics of aeronautics and the give-and-take inherent to aircraft design. A “field trip” to the Virginia Air and Space Center will hit the concepts home! With clear lesson objectives, the key aspects of aeronautics are presented:
 - Low and High-Speed Aerodynamics ⇒ Lift -- Sources of Drag -- Stall -- Mach Number Effects ... Designing for Speed
 - Stability and Control ⇒ Ailerons, Elevator, and Rudder -- Designing for Roll, Pitch, and Yaw Stability
 - Structures and Materials ⇒ Ribs, Spars, and Pressure Bulkheads -- G-Loading -- Landing Gear -- Composites
 - Propulsion Systems ⇒ Propellers to SCRAMjets -- Compressor, Combustor, and Turbine -- Aircraft & Engine(s) Integration
 - Aircraft Performance ⇒ Thrust Curves, Range and Endurance, Glides, Climbs, Takeoffs and Landings, and Turns

Although the focus is clearly on conventional airplanes, discussion will “stray” to other air vehicles, including airships, helicopters, UAVs, and stealth, hypersonic, STOL, and micro-air vehicles. You will be given a set of course notes and a copy of Aerodynamics for Naval Aviators, one of the best references available. 3.2 Continuing Education Units (CEUs) are awarded.

- **WHO SHOULD ATTEND:** Anyone working directly or indirectly in the field of aviation -- program managers, engineers, scientists, analysts, and technicians -- aircraft operational, test, logistical, and maintenance personnel. A building-block approach is used -- no prior knowledge is assumed. After seven years and nearly 2000 graduates from audiences across the Air Force, Navy, NASA, FAA, and industry, our instructors have earned a tremendous reputation for teaching fundamental aeronautics and propulsion. In our classroom, theory and practical application come alive! Here’s what a couple graduates have said:
 - *“Without a doubt, the best course of any type held here at Edwards AFB ... I will never understand why courses of this caliber are not mandatory here at the Air Force Flight Test Center.”* Edwards AFB, April 2009
 - *“Exceeded expectations! It was exactly what I was looking for. After 23 years in the propulsion area, I found I knew very little about the rest of the plane.”* Wright-Patterson AFB, September 2002
 - *“Perfect balance of technical and practical information -- best class I’ve taken since I’ve been with NASA (17 years) – spoke at a level where everyone could understand.”* NASA Marshall, March 2004
 - *“I liked everything, but especially the practical examples and stories to illustrate important points ... many thanks for explaining such a difficult subject so simply and making it easy to understand.”* FAA HQ, June 2005
- **PRIMARY INSTRUCTOR:** Dr. Wayne F. Hallgren is a 1975 graduate of West Point, retired Air Force Colonel, and Vice President of Practical Aeronautics. He founded Hallgren Associates in 2002 -- now merged with Practical Aeronautics, he’s continuing his passion for teaching and learning. Wayne taught for ten years in the Air Force Academy’s Department of Aeronautics, including two years as Deputy Department Head -- on his departure, the cadets rated him the best instructor in the department. For five years, he was adjunct faculty to the Air Force Test Pilot School, where he twice won their “Outstanding Academic Instructor Award.” Wayne is a member of the Experimental Aircraft Association’s Speakers Bureau, an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and co-author of an Introduction to Aircraft Flight Mechanics, winner of AIAA’s 2006 Summerfield Book Award.
- **COST, REGISTRATION, & CANCELLATION POLICY:** \$1510. \$1360 for Federal Government and NIA employees, as well as AIAA members. Group discounts are also available. For more information visit www.PracticalAero.com. To register, contact CHallgren@PracticalAero.com or call (970) 887-3155. Substitutions may be made at any time. Cancellations must be received two weeks prior to course start date and is subject to a \$50 fee. If you must cancel within the 2-week period, and do not have a substitute, you may forfeit the entire fee. A total refund will be issued should the course be canceled.